

Claims

1. Proximity switch or sensor which operates according to the inductive or capacitive action principle and contains a LC tuned circuit and a dynamically connected amplifier, and in which the approach of a suitable influencing element or article changes at least one oscillation parameter, the operating state of the amplifier being changed when the article does not reach a certain distance to the tuned circuit, the free or externally excited oscillation not however being interrupted with reaching the operating point, or at least not immediately, characterized in that it likewise contains display means (5) which are able to signal the presence of influence on the tuned circuit (2) before the operating point or value of the amplifier (3) is reached.

2. Proximity switch as claimed in claim 1, wherein the display means (5) are also active, i.e. signal the presence of an influence on the tuned circuit (2), when the operating point has been reached and exceeded.

3. Proximity switch as claimed in one of claims 1 and 2, wherein the display means (5) are adjusted such that they are active when the intensity of the influence on the tuned circuit (2) is within at least one sensing range (B) which surrounds and contains the intensity value (Is) which corresponds to the operating point.

4. Proximity switch as claimed in one of claims 1 and 2, wherein the display means (5) are active as long as the intensity of the influence on the tuned circuit (2) is above a first lower bottom threshold value (Iu) and below a second higher top threshold value (Io), these threshold values (Is) surrounding the intensity value (Is) which corresponds to the operating point (on both sides).

5. Proximity switch as claimed in claim 4, wherein the bottom and top threshold value (I_u , I_o) are roughly 5% to 20%, preferably roughly 10%, below and above the intensity value (I_s) which corresponds to the operating point.

6. Proximity switch as claimed in one of claims 3 to 5, wherein the display means (5), when they are active, deliver various signals depending on whether the intensity of the influence on the tuned circuit (2) has exceeded the intensity value (I_s) which corresponds to the operating point or not.

7. Proximity switch as claimed in one of claims 3 to 6, wherein the parameter which is used to evaluate the influence on the tuned circuit (2) is chosen from the group which contains amplitude, phase and frequency, and wherein the signal delivered by the display means (5) is a signal of any shape, for example a rectangular pulse signal which indicates the state or the point of instantaneous intensity of the influence on the tuned circuit (2) relative to the sensing range (B) and/or the threshold values (I_u , I_o) statically, dynamically, with a time delay or by means of the action of another function.

8. Proximity switch as claimed in one of claims 3 to 7, wherein the sensing range (B) or the threshold values can be adjusted and wherein the display means (5) contain a switching amplifier (6) or wherein a switching amplifier (6) is dynamically connected in series to these display means (5).

9. Application process of a proximity switch or sensor as claimed in one of claims 1 to 8, wherein it has mainly the following steps:

- mounting of the housing (7) which contains the switch or sensor (1) at the application site;
- execution of a calibration or adjustment process of the switch or sensor (1), specifically of

the tuned circuit (2) and the display means (5), and the optionally dynamically connected electronics (3, 6), in the presence of a working environment which is conventional in the application, but in the absence of the influencing element or article (4) which is to be detected in the working process, at least by moving out of the detection range (E) of the switch or sensor (1);

- use of an adjusted switch or sensor (1) as a proximity switch, after completion of the preceding steps.

10. Application process as claimed in claim 9, wherein the calibration or adjustment process is repeated, for example after any change of the working environment of the switch or sensor (1), while the influencing element (4) is far outside of the detection range (E).